Korea

Economic Overview and Market Situation

With a land size slightly larger than the state of Indiana (38,031 mi^2), South Korea (Korea) is populated by almost 46 million people. The country is primarily mountainous, with approximately 80% of its population concentrated in lowland urban areas (Encyclopedia Britannica 1996). Migration to urban areas has increased in recent years, and by 1998 Korea's population density reached 1,185 people per square mile in urban centers, making Korea one of the most densely populated countries in Asia (World Almanac 1998). Korea's largest cities include Seoul (10.9 million), Pusan (3.8 million), Taegu (2.2 million), Inchon (2.1 million), and Kwangju (2.0 million) (US Department of State 1998).

Almost two-thirds of the country is covered by forestland, yet forestland totals only 1,594,324 acres, or 0.37 acres per capita, one-quarter of the world's average (Korea Overseas Information Service 1997). The Korean War, an increasing demand for fuel wood, and population growth, have depleted much of Korea's timber resource. Since the 1960s, the Korean Forestry Administration has embarked on a major replanting effort. The Korean Forestry Administration initiated the National Forest Extension Policy with the long-term goal to increase the size of national forests from 30% to 40% of total forestland in Korea (Yoo 1997).

Korea, has emerged as an important market for US wood products. During the past 30 years, the country has enjoyed phenomenal economic growth and despite the Asian economic crisis, it is the 11th leading economy in the world and the 4th leading export market for US wood products, importing almost $900 million in wood products in 1997. By 1998, wood imports from the US dropped to $463 million as a result of the Asian recession, but they are beginning to recover. Rising consumer incomes have enabled more families to purchase single-family homes and increased exposure to western home design has piqued consumer interest. Western-style 2x4 homes have been introduced in Korea and are the primary driver for softwood dimension lumber consumption. Wood frame construction is also gaining support from the Korean government. Since the Korean government has almost reached its goal of providing a 100% housing supply, the Ministry of Construction and Transportation (MOCT) is redirecting its mission to focus more attention on building and promoting higher quality housing and more aesthetically pleasing living environments. These plans include developing several communities throughout Korea that will include lower density housing and wood frame homes. Building codes specific to wood frame construction are also being developed with help from US government and industry (Braden and Tichy 2000).

Solid wood products constituted one-third of US wood product exports to Korea in 1997. Unprocessed logs represent 86% of solid wood product exports; however, primary product exports are declining as secondary product exports are increasing. As shown in Figure 24, Korean softwood lumber imports from the US increased from $11.3 million in 1989 to $21.3 in 1997 yet by 1998, US softwood lumber exports to Korea fell to just over $6 million (USITC 2000). While 1999 statistics do not show improvement, the market has stabilized and it is recovering.

Despite the Korean government's efforts to provide greater access to its consumer markets, a variety of obstacles still remain. Some of these obstacles are specific to wood construction, such as inadequate building codes and a lack of technical training in 2x4 construction. Other obstacles are more generic. For example, the import and distribution process is not well understood, even to Koreans. There are limited port facilities and roads, and the dominant form of housing is concrete high-rise. Another important point is that *chaebol*, who dominate many of large construction contracts, can be unreliable when it comes to paying their suppliers. *Chaebol* commonly award contracts to suppliers solely on the basis of which firm will extend credit, the *chaebol* then reinvest these funds for the period before payment is due on the contract. The Korean recession occurred in part, because the *chaebol's* speculative investments failed, and as a result the *chaebol* could not pay their creditors, which forced many creditors into bankruptcy. Many Korean and American firms consider doing business with the *chaebol*, too risky, yet they dominate most of the large construction projects. Other suppliers report no problems receiving payment. Finally, the Korean government's main focus has been on providing housing for the greatest number of people. Since concrete high-rises offer this, there is limited knowledge among housing officials about wood frame construction and single family housing and little attention paid to this type of housing. If US exporters are to improve their competitiveness in the Korean market for wood products they must develop a better understanding of the residential

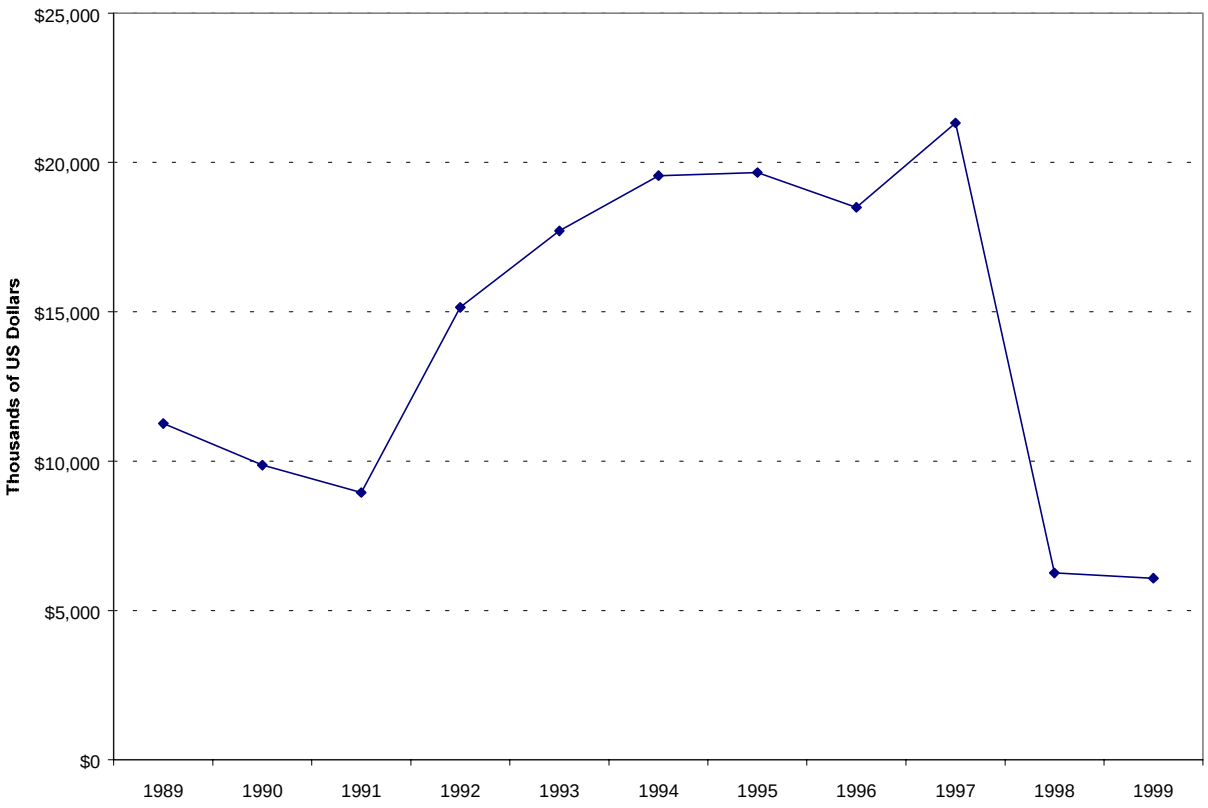

Figure 24. US softwood lumber export revenue to Korea, 1989-1999 (Source: US International Trade Commission 2000).

construction industry, consumer preferences and product needs, business practices, and consumer and government perceptions regarding wood frame housing in Korea. While upper income individuals are the leading consumers of 2x4 homes, lumber is still a commodity product, and Korea is a price driven market. Suppliers must provide appropriate products at a price that is competitive with European, and South American suppliers.

The Asian economic crisis has had a profound impact on the consumption of luxury goods, particularly wood frame homes and wood-based building materials. In late 1997, the Korean economy suffered a loss in investor confidence as a series of corporate bankruptcies occurred, and the accumulation of bad loans revealed unstable business practices among several of the country's largest *chaebol*, or conglomerates, and lending organizations. Consequently, domestic production and consumption fell, unemployment increased, and the overall health of the economy declined. The Korean won weakened against the US dollar, causing the price of imported goods to double. The Korean government, however, embarked on one of the most aggressive economic recovery programs in Asia. With financial help from the World Bank, Korea successfully instituted several long-term economic reforms that boosted its economy. In 1997, at the height of the recession, industry experts estimated that economic recovery would take 2-4 years, yet from 1998 to 1999, the unemployment rate fell from 8% to 5.7%, the won strengthened, and per capita income is expected to exceed pre-recession levels in 2000 (AF&PA 2000).

Korea, like many new markets, is a combination of opportunities and obstacles for US suppliers. The positive side of the Korean market is that 2x4 homes dominate the wood frame housing sector, and therefore the opportunities for higher grade dimension lumber are increasing. Suppliers do not have to produce market-specific products such as lumber cut to post and beam specifications, which is the case in the Japanese market. Since North American firms introduced 2x4 construction, construction techniques and materials that are used mirror North American techniques. North American industry has the opportunity to set precedents in the Korean 2x4 market and green lumber is among the products accepted.

The Korean market also has a downside. Korean carpenters are good at building concrete frames (rough carpentry) and finish carpentry, yet they are less skilled in wood framing. Training in 2x4 framing technology, in addition to instruction regarding proper handling and storage of wooden building materials is critical to the long-term success of wood frame construction in Korea. For the past four years the AF&PA Korea office has organized an annual two-week long 2x4 construction training program near Seoul in cooperation with the Korean Wood Frame Construction Institute and the Homebuilders Institute. There are still many carpenters, however, who do not understand the engineering and construction principles associated with properly building a 2x4 home and few architects trained in 2x4 design, which limits growth of the industry. It is important for technical transfer on the part of US wood products associations and individual firms to be an integral part of promoting wood frame construction in Korea.

The Korean building code represents another challenge to the widespread adoption of high-quality wood frame housing in Korea. The existing building code places restrictions on the maximum height and total floor area of wood-frame buildings, yet it does not include detailed requirements for structural performance aspects such as proper engineering principles, material use, and foundations. The lack of a detailed building code leaves room for the possibility that construction companies that do not have a complete understanding of wood frame housing may build substandard homes. The impact of poorly built homes may be compounded by the absence of building inspectors for wood frame housing. Instead, Korean law mandates that the builder or architect is liable for any damages resulting from substandard construction. While builders who construct dangerous homes can be criminally charged for any gross injuries, it may be that building codes are enforced only after major damages are incurred. A more likely scenario associated with poor construction is a dissatisfied customer. Given the small size of the wood frame home industry and the reliance on word of mouth advertising, the negative perceptions caused by a few poorly constructed homes could have a widespread impact on the industry.

Domestic Production, Supply, and Imports of Wood Products

Korea imports approximately 83% of the wood it consumes. In 1996, Korea imported 6.8 million cubic meters (2.9 billion board feet) (1 cubic meter = 423 board feet) of softwood logs, 1.4 million cubic meters of hardwood logs, and 366,000 m^3 of softwood lumber (Foreign Agricultural Service 1997). In 1998, imports of softwood logs dropped to 3.7 million cubic meters and Korea imported 194,000 m^3 of softwood lumber (Foreign Agricultural Service 1999). By 1999, demand for softwood lumber improved and Korea imported 215,000 m^3. Year 2000 imports should exceed previous volumes since 85,000 m^3 of softwood lumber was imported in just the first quarter (AF&PA 2000a).

Although logs, lumber, and chips are the leading wood imports, the general trend in import statistics indicate a decline in primary products such as logs and chips, and an increase in secondary products such as windows, doors, and prefabricated homes as well as lumber. Revenue from logs, lumber, veneer, and plywood remain much greater than secondary manufactured products, yet sales of secondary processed products have exhibited strong growth. According to Foreign Agricultural Service statistics, prior to the recession in late 1997, imports of logs, particleboard, and fiberboard have been declining since 1992, whereas imports of lumber, veneer, plywood, wooden doors and windows, and wood frame homes have increased. Wood frame homes displayed the most significant growth of all the products tracked, with a 1,023% increase from 1992 to 1996, and US export revenues totaling $29.2 million in 1997 (Table 17). Total exports of wood products from the US to Korea, however, have been declining steadily over the past decade. Largely a price driven market, the US must compete with lower cost tropical timber producers such as Indonesia and Malaysia.

The decision by Korean firms to select a particular supplier seems to depend heavily upon the agent the Korean firm interacts with. Some Korean firms base their opinions about wood products from the US on past experiences with lower grades of logs or lumber that have been common in Korea. Thus, opinions about the quality of US products vary greatly from company to company. While most importers reported that producers in the US and Canada provide the highest quality temperate hardwood and softwood products, others cited other countries such as Switzerland, Germany, and Russia. These varying opinions may be a case of a supplier or agent failing to provide materials that are appropriate for the intended final use. It is important in an emerging market such as Korea where reputation is highly dependent upon word of mouth advertising, that agents and sales people take the time to understand what their customers' product needs are before supplying the product. Attentive after sales service is also vital. It is important to understand if and why a customer is not satisfied with the product. Without an active

customer satisfaction evaluation, customers are more likely to switch suppliers than voluntarily explain product problems. This is of particular importance to Alaska firms, which, with the exception of a few firms, tend to have few employees and limited resources. Supplying any overseas market requires a great amount of time to research the market to understand consumer preferences and requirements, as well as to secure, service, and maintain contracts. Even if a firm decides to use an agent as an intermediary to the Korean market, constant communication and an intimate understanding of the market is still necessary to ensure that the firm's products are represented well.

Dimension Lumber

As shown in Figure 25, domestic lumber production in Korea peaked in 1988 at almost 6 million cubic meters with domestic sawmills consuming 8.8 million cubic meters of logs. By 1996-1997, consumption of logs for lumber production fell to approximately 4.9 million cubic meters. As shown in Table 18, 95% of domestically produced lumber was milled from softwood logs in 1997 (Wood Markets Quarterly 1997). Domestic sawmills and panel manufacturers facing rising overhead costs and dated technology are finding it difficult to compete with imported lumber and plywood. Industry analysts predict the domestic sawmill industry will continue to shrink. One analyst predicts 50% of Korea's sawmills will close during the next few years (Widman's World Wood Review 1997).

Wood frame construction accounts for only a minimal amount of lumber consumption. Approximately 73% of lumber is used for concrete formwork or scaffolding, the majority of which is low quality softwood lumber (Table 19). The remaining is used as structural lumber in commercial and residential 2x4 wood frame construction. Despite the failing domestic sawmill industry, domestic manufacturers continue to supply approximately five times the amount of lumber imported. While the 2x4 construction sector is still small, it has great potential for growth. The number of western-style wooden housing starts increased from 97 units in 1994 to approximately 800 units in 1996 and an estimated 1,100 homes in 1997 (AF&PA 1998). In 1999, the wood frame home sector appeared to recover from the recession. There were 1,265 units started, a 13% increase over 1998. Two-by-four homes comprise 80% of total wooden house starts and the large number of total starts and building permits issued during the last quarter of 1999 bodes well for further recovery in 2000.

Table 17. Korea's total forest product imports, 1992-1998 (US $ millions).

Product	1992	1993	1994	1995	1996	1997	1998	% Change 1992-1996
Logs	919	1,183	1012	1,047	963	877	349	-.05
Lumber	250	452	373	409	465	453	166	81
Veneer	30	37	55	46	64	112	43	270
Particleboard	72	91	72	91	77	54	25	-25
Fiberboard	28	56	69	40	26	25	10	-9
Plywood	351	552	536	594	531	449	154	28
Doors & windows	32	48	67	80	110	101	34	216
Wooden homes	2.6	1.9	1.2	11.0	22.6	29.2	6.2	1,023
Total	1,790	2,599	2,413	2,605	2,568	2,375	912	33

Source*:* Foreign Agricultural Service 1999

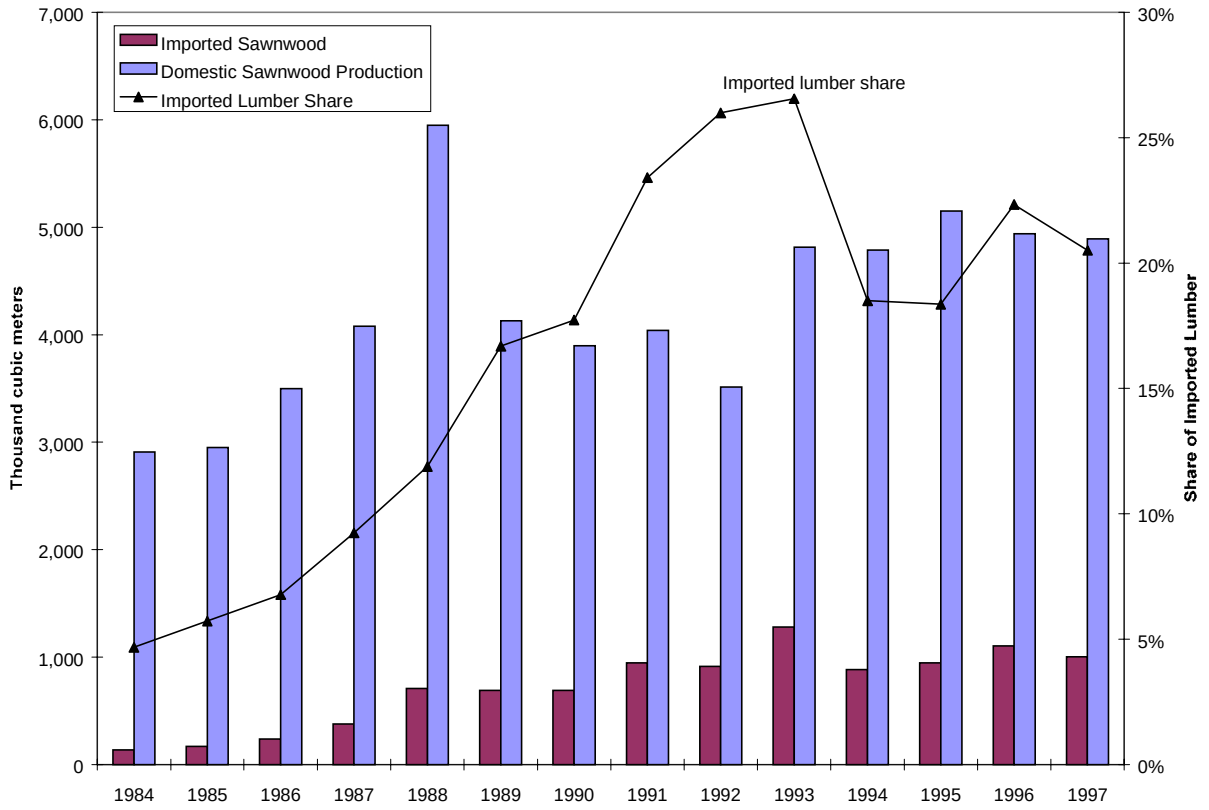

Figure 25. Lumber imports and domestic production, 1984-1997 (Source: Korea Forestry Administration 1997, Korea Plywood Industries Association 1998, FAS 1999).

Table 18. Korea lumber production by species (1,000 cubic meters).

	1994	1995	1996	1997
Softwood species	3,190	3,014	3,105	3,073
Hardwood species	672	426	275	157
Total	3,862	3,440	3,380	3,230

Source: Korea Plywood Industries Association 1998, FAS 1999. (1 cubic meter = 423 board feet)

Table 19. Lumber end use markets by product, 1997.

End Use	Sawn Wood	All Wood
Construction & Engineering	73.2%	56.1%
Packaging	10.2%	5.9%
Furniture	n/a	23.5%
Other	16.6%	14.5%
Total	100%	100%

Source: Korea Forestry Research Institute 1998

As the cost of labor in Korea has increased, domestic lumber production has become less competitive and lumber imports have increased. Imported lumber volume increased from 136,000 m^3 in 1984 to 1.16 million cubic meters in 1996. By 1999, Chile and New Zealand together represented 70% of the imported softwood lumber market, a 32% share increase from 1992 (Table 20). Chile has been the winner in the battle for market share, increasing its share of the Korean softwood lumber market 32% from 1992 to 1998. Meanwhile, the US has had a 30% loss in market share. Radiata pine from New Zealand is used as temporary construction material and for pallets and packaging, Korea's two largest end-use markets for softwood lumber. Softwood lumber imports from the US declined 30% between 1992 and 1998, largely due to US harvest restrictions and the strong US dollar. Canadian lumber imports have declined as well, but by 1998 Canada was still exporting almost twice as much softwood lumber to Korea as the US, although Canada's share of the market fell from 27% to 7% between 1992 and 1998 (Foreign Agricultural Service, 1999).

Where quality is not a major concern, the Alaska, Continental US and Canadian suppliers can expect to continue to lose market share to New Zealand, Chile, and tropical producers who supply lower cost materials. Domestic policies in the US that impose harvest or export restrictions and ultimately drive prices up will continue to have a negative impact on the competitiveness of US products in commodity markets such as logs and lumber. Logs, lumber, and plywood products from Indonesia can also be expected to become more competitive in the Korean market as prices drop in response to Indonesia's economic decline. The US remains far more competitive in non-commodity or niche markets, such as wood frame homes and wooden building materials, where consumers are looking for high quality as opposed to the lowest price. This is particularly true in the Korean wooden home industry, which caters to a high-income sector of the population.

Table 20. Softwood lumber imports by country of origin, 1992-1998 (1000 cubic meters).

	1992	1993	1994	1995	1996	1997	1998	% Change	1992 Share	1998 Share
US	54	29	23	26	19	19	6	-89%	33%	3%
Canada	43	83	53	41	50	50	13	-70%	27%	7%
New Zealand	28	33	40	91	77	77	42	50%	17%	22%
Chile	34	8	11	144	130	130	94	176%	21%	48%
Russia	--	18	20	17	8	8	--	0%	0%	0%
Others	3	17	5	47	68	77	39	8%	2%	20%
Total	162	188	152	366	352	361	194	--	--	--

Source*:* Foreign Agricultural Service 1999. (1 cubic meter = 423 board feet)

Table 21. US softwood lumber exports to Korea, by species 1992-1999 (cubic meters).

	1992	1993	1994	1995	1996	1997	1998	1999
Sitka spruce	6,940,065	4,463,273	8,482,390	11,218,265	7,985,861	7,879,060	1,710,681	2,508,094
Pine	475,666	415,876	344,473	403,825	330,322	2,048,315	639,435	1,225,731
Cedar	91,656	93,508	124,976	--	323,257	748,391	155,682	396,918
Douglas fir	996,976	892,753	165,436	960,686	1,349,825	1,084,663	225,197	336,716
Hemlock	1,787,218	3,857,177	655,411	663,613	310,337	501,473	29,443	321,779
Southern yellow pine	512,983	13,477	--	47,508	54,808	209,626	--	139,694
Western red cedar	247,154	177,411	496,240	211,572	685,472	253,930	109,797	100,698
Coniferous, NESOI*	2,519,207	2,131,331	2,203,274	3,057,400	3,023,866	1,438,113	269,288	70,106
Redwood	266,808	475,900	154,648	276,806	285,179	286,200	24,931	43,540
Spruce, NESOI	1,082,431	5,011,600	5,918,937	896,318	1,966,999	3,345,826	465,197	19,446
Fir	7,566	111,200	--	985,628	1,889,956	795,584	105,087	--
Larch	--	--	--	--	25,776	16,397	--	--
Spruce-Pine-Fir	--	--	--	--	--	37,389	--	--
Yellow cedar	165,950	--	106,684	189,650	74,300	--	0	--

Source*:* USITC 2000. *non-specified (1 cubic meter = 423 board feet)

According to US International Trade Commission statistics, Sitka spruce is the leading species of softwood lumber exported from the US to Korea, followed by pine, cedar, and Douglas fir. Sitka spruce is in great demand by Korea's musical instrument producers. As shown in Table 21, although imports have not fully recovered, 1999 imports were two-thirds greater than 1998 levels. Cedar, the third leading import, is used for high-grade moulding and millwork. Imports of this species have more than doubled since 1998, an indication that the market for luxury goods is beginning to rebound. Douglas fir and hemlock, western species primarily used for dimension lumber in 2x4 construction, have begun to recover from the recent economic instability. Douglas fir exports peaked in 1996, declined, and have begun to increase, yet the overall trend is downward. Although hemlock was more widely used than Douglas fir, imports of the species are now lower than Douglas fir as the Koreans continue to substitute Radiata pine for hemlock.

Strategic Recommendations

As stated earlier, the Korean market for primary and secondary wood products is price driven, with the exception of specific markets such as building materials for wood frame housing and musical instrument manufacturing. Consumers in the wood frame housing market will pay premiums for high-grade structural and non-structural materials, yet this market is very small. Furthermore, it is difficult for Alaska producers to compete with PNW and BC supplier prices for kiln-dried dimension lumber. Since the market is so small at this time, it is unadvisable for Alaska firms to incur the risks of attempting to supply this market for such low potential returns. Although US firms supply the majority of Korea's dimension lumber, lumber is still a commodity market, and therefore primarily price-driven. Where quality is not a major concern, the US and Canada can expect to continue to lose market share to New Zealand, Chile, and tropical producers who supply lower cost materials. Policies that impose harvest restrictions and rising wages in the continental US and Alaska ultimately drive prices up will continue to have a negative impact on the competitiveness of US products in commodity markets such as logs and lumber.

Rather than focus on Korea for higher processed wood products, such as lumber, it may be more appropriate for Alaska producers to focus on maintaining their share of the Korean market for pulp logs and Sitka spruce logs or non-commodity specialty wood products, such as wood for musical instrument manufacturing. Since Sitka spruce exports dominate US softwood lumber exports to Korea, it appears that Alaska suppliers have identified, not just a niche market, but one of Korea's leading wood consuming sectors. Sitka spruce has unique physical properties that make it a superior material for wooden musical instruments and it is difficult for any other species of wood to take market share from Sitka spruce in this end market. Since the price for premium Sitka spruce is higher than the price for dimension lumber or wood that is used in plywood manufacturing, the musical instrument makes more sense for Alaska firms. Price competition is not an issue and the necessary manufacturing process is limited, so Alaska firms do not appear to have to upgrade their production facilities.